What is claimed is:

1. A mold insert, comprising at least one optically critical surface, wherein periodic structures on the optically critical surface are of a periodicity of less than about 3 μm and an amplitude of less than about 4 nm RMS.

2. The mold insert of claim 1, wherein the insert further comprises pure steel, brass, copper, nickel-plated substrates, chromium, cobalt-nickel, alloyed martensitic steel, or combinations thereof.

3. The mold insert of claim 1, wherein the insert further comprises nickel-plated copper or nickel-plated brass.

4. A mold half for use in molding a contact lens, comprising at least one molding surface, wherein periodic structures on the molding surface are of a periodicity of less than about 3 μm and an amplitude of less than about 4 nm RMS.

5. The mold half of claim 4, wherein the mold half further comprises polypropylene, polystyrene, and cyclic polyolefins, polyacrylonitrile materials, or combinations thereof.

6. A silicone hydrogel contact lens, comprising at least one surface wherein periodic structures on the surface are of a periodicity of less than about 3 μm and an amplitude of less than about 4 nm RMS.

7. The silicone hydrogel lens of claim 6, wherein the at least one surface further comprises a hydrophilic coating.

8. The silicone hydrogel lens of claim 7, wherein the hydrophilic coating is selected from the group consisting of poly(acrylic acid), poly(methacrylic acid), poly(dimeth)acrylamide, poly(acrylamide), or poly(hydroxyethylmethacrylate).

9. The silicone hydrogel lens of claim 7, wherein the hydrophilic coating is poly(acrylic acid).

10. The silicone hydrogel lens of claim 7, wherein the hydrophilic coating is poly(acrylamide).

11. The silicone hydrogel lens of claim 7, wherein the hydrophilic coating is poly(hydroxyethylmethacrylate).

12. The silicone hydrogel lens of claim 6, wherein the silicone hydrogel comprises a Group Transfer Product of a reaction mixture comprising 2-hydroxyethyl methacrylate, methyl methacrylate, methacryloxypropyltris(trimethylsiloxy)silane, and mono-methacryloxypropyl terminated mono-butyl terminated polydimethylsiloxane and a polymerizable mixture comprising a Si_{7-9} monomethacryloxy terminated polydimethyl siloxane; a methacryloxypropyl tris(trimethyl siloxy) silane; N,N-dimethyl acrylamide; 2-hydroxy ethyl methacrylate; and tetraethyleneglycol dimethacrylate.

13. The silicone hydrogel lens of claim 7, wherein the silicone hydrogel comprises a Group Transfer Product of a reaction mixture comprising 2-hydroxyethyl methacrylate, methyl methacrylate, methacryloxypropyltris(trimethylsiloxy)silane, and mono-methacryloxypropyl terminated mono-butyl terminated polydimethylsiloxane and a polymerizable mixture comprising a Si_{7-9} monomethacryloxy terminated polydimethyl siloxane; a methacryloxypropyl tris(trimethyl siloxy) silane; N,N-dimethyl acrylamide; 2-hydroxy ethyl methacrylate; and tetraethyleneglycol dimethacrylate.

14. The silicone hydrogel lens of claim 6, wherein the silicone hydrogel comprises a fluorosiloxane hydrogel.

15. The silicone hydrogel lens of claim 7, wherein the silicone hydrogel comprises a fluorosiloxane hydrogel.

16. A method for manufacturing a silicone hydrogel contact lens, comprising the steps of:

a.) providing a mold insert comprising at least one optically critical surface, wherein periodic structures on the optically critical surface are of a periodicity of less than about 3 μm and an amplitude of less than about 4 nm RMS;

b.) producing at least one mold half using the mold insert provided in step a.); and

c.) molding the contact lens using the at least one mold half produced in step b.).

17. The method of claim 16, wherein step a.) is carried out by polishing.

18. The method of claim 17, wherein step a.) is carried out by lathing.

19. A method for manufacturing a silicone hydrogel contact lens, comprising the steps of:

a.) producing at least one mold half comprising at least one molding surface, wherein periodic structures on the molding surface are of a periodicity of less than about 3 μm and an amplitude of less than about 4 nm RMS; and

b.) molding the contact lens using the at least one mold half.